

APPENDIX A

The following table summarizes examples of microfluidic components and structures that can be made available in a library for design capture.

Component/ Structure	Brief Description	Reference(s)	Figure Number(s)
ON/OFF Switches	An ON/OFF switch is open in the ON state allowing fluid flow therethrough and is closed in the OFF state to prevent fluid flow therethrough.		
	Pressure-actuated, normally open switch	Present Application 60/282,253	2A-3 7A-7E 8
	Pressure-actuated, normally closed switch	60/282,253	9A-9D
	Vacuum-actuated, normally closed switch	60/282,253	10 & 15A- 15J
	Inverted pyramid pressure amplification switch	60/282,253	39A-39D 40-41
	T-switch	Present Application	13A
Valves	Valves are provided for directing fluid flow.		
	Side-actuated valve	PCT/US00/ 17740	48A-48B
	Unidirectional valve for permitting fluid flow in one direction therethrough	60/282,253	20A-B 21 22 23
Interconnect Bridges	Interconnect bridge having a control channel with tapered element for bridging a fluid channel	Present Application	17B
Vias	Vias provided in one channel for bridging another channel.	Present Application	18B
Tapers	Fluidic taper for facilitating connection between a larger channel and a small channel	Present Application	28
Switchable Flow Arrays	Switchable flow array including fluid passages that can be selectively directed to flow in two perpendicular directions	PCT/US00/ 17740	31A-31D

Component/ Structure	Brief Description	Reference(s)	Figure Number(s)
Multiplexer	Multiplexer having multiplexed channel flow controllers for directing fluid flow into one or more of a plurality of synthesis channels or chambers in which solid phase synthesis may be performed	PCT/US00/17740	33
Gates or Gate Structures	Fluidic logical gates can be used to perform Boolean functions.		
	Inverter for inverting an input to produce an output	60/282,253	12A
	OR gate	60/282,253	12C
	NOR gate	60/282,253	12E
	AND gate	60/282,253	12G
	NAND gate	Present Application	5A
	Latch/Flip-flop	Present Application	6A 6B
		60/282,253	33
	D-latch	Present Application	7A
Amplifiers	Fluidic pressure amplifier for amplifying pressure	60/282,253	3-4B
Pumps	Fluidic pumps are used for pumping fluid.		
	Pump operating by compression and bending of fluid chamber	60/282,253	17A-B
	Peristaltic pump with multiple control lines for pumping	PCT/US00/17740	24A-24B
	Rotary pump/mixer for mixing and incubating solutions	Present Application	21
Capacitors & Reservoirs	A capacitor or reservoir can be used for storing and releasing pressure.		
	Single-chamber high-pressure reservoir	60/282,253	24
	Two-chamber capacitor	60/282,253	28-29B
	Single-chamber vacuum reservoir	60/282,253	32
Pressure Sources	High pressure source for applying high pressure fluid to load devices	60/282,253	26
Generators	High pressure generator having stages for multiplying output pressure	60/282,253	27
Vacuum Sources	Vacuum source for driving vacuum-actuated devices	60/282,253	30

Component/ Structure	Brief Description	Reference(s)	Figure Number(s)
Fluid Chambers	Selectively addressable reaction chambers provided along flow lines and in an array for selectively directing fluid flow into one or more of the reaction chambers	PCT/US00/ 17740	28A-30
Switching Regulators	Switching regulator for performing analog functions	60/282,253	34
Sorting Devices	Sorting device for cell sorting and DNA sizing	PCT/US00/ 17740 Present Application	36 27-28
Separation Devices	Separation device for perform separation of materials	PCT/US00/ 17740	43
Cell Pen Structures	Cell pen array for storing materials within a selected, addressable position for ready access	PCT/US00/ 17740	44A-44D
Cell Cage Structures	Cell cage with pillars that permit opening of cage for transfer of cells	PCT/US00/ 17740	45A-45B
Cell Grinder Structures	Cell grinder with interdigitated posts that can be closed to crush material therebetween	PCT/US00/ 17740	46A-46B
Pressure Oscillators	Pressure oscillator for generating pressure oscillation	PCT/US00/ 17740	47
Mirror Array Structures	With appropriate control circuitry, a microfluidic structure having a light-reflecting membrane may be employed as a digital or analog mirror array.	PCT/US00/ 17740	38
Refractive Devices	Refractive device having elastomeric material capable of transmitting incident light	PCT/US00/ 17740	39 40 41